E. Argyle Street Diversion Plan
December 1st, 2005

PRESENTATION OUTLINE

1. What is the problem?
2. What is our objective?
3. History!
4. What are the issues to be considered while conducting the study?
5. What was our work plan to conduct this study?
6. The Analysis
7. The Recommendation

1. What is the problem?

- Residents expressed concerns about the high traffic volume on a secondary residential street (E. Argyle St.) and they are requesting a "diversion plan"

Question:

- How much traffic is too much? How can we determine that? What are the thresholds the City has established for a "diversion plan"?

Threshold

TABLE A - Eligibility Criteria for Residential Traffic Diversion Plans

For secondary residential streets, any one of the following:

A minimum of:

1. 2,000 vehicles per day in both directions, or
2. 200 vehicles in any hour in both directions, or
3. 150 vehicles in any hour in one direction

2. What is the objective?

- We need to bring traffic volumes below these thresholds for both the daily and hourly traffic.

Questions:

- How to do that? How much reduction is possible? And what are the other issues that we have to consider while solving this problem?

3. HISTORY!

OLD COUNTS!!

1970's!!

Argyle St. daily counts (between Maryland Avenue and S. Washington St.)

06/25/73	1983 veh./day
10/10/77	2609 veh./day

- Argyle St. daily counts (between Monroe St. Avenue and S. Washington St.)

11/09/76	2500 veh./day

Note: The threshold at this time was 2,500 veh./day for SRS.

MORE OLD COUNTS?

1980's – Let's start with 80-81!!

- 08/21/80 2239 (highest hour: 236, 119 EB, 117 WB)
- 05/81 Wintergreen Plaza Opens, approx. 2600 veh./day
- 05/25/81 Petition from Argyle's residents to close Argyle at Monroe.
- 09/81 Request denied by T&T Commission, considering 2500 veh./day "excessive" but "not drastically so" and that traffic did not increase since 1974. T&T Com. recommended sidewalks and to restrict trucks from the section between S. Washington/Monroe, similar to the section between S. Washington/Maryland.
- 9/24/81 Argyle's residents disagreed with T&T Commission.
- T&T response: Fleet will open and traffic will be reduced on Argyle. If not, City will consider turn restrictions from Maryland onto Argyle

MORE COUNTS in 81?

Weekday	10/01/81	3111 veh./day
	85th percentile speed: 33 mph	
Sat.	10/03/81	2698 veh./day
Sun.	10/04/81	1912 veh./day
Weekday	11/16/81	3300 veh./day
	(highest hour: 349, 167 EB, 182 WB)	

1982

- 5/82 Fleet St. opens to East of Monroe St.
- 5/19/82 3600 veh./day
- At M&C session on 5/24/82, Argyle resident stated that Fleet was completed and opened, but still heavy traffic on Argyle. A street closure was requested.
- 06/04/82 3500 veh./day
- 7/10/82 Maryland Avenue residents voiced their concerns about any restrictions.
- 08/11/82 2700 veh./day (highest hour: 278, 127 EB, 151 WB)
- 11/82 T&T Commission suggests to wait until a signal at Fleet/Monroe is built

1983

- 02/14/83 T&T Commission proposed “Do Not Enter”
- 05/23/83 “Do Not Enter” approved
- 06/83 “Do Not Enter” implemented
- 07/11/83 Petition against “Do Not Enter” (mostly Maryland residents, but also a few from S. Adams and S. Washington)
- 08/19/83 1500 veh./day
- 12/19/83 Request from Maryland Ave. residents to re-open Argyle (Citizen Forum – M&C)
- 12/30/83 City Manager sent a letter: T&T Commission will review.

1984

- 01/11/84 — Argyle residents sent a letter objecting the potential review

- 01/24/84 — T&T Commission Meeting

Argyle residents	MD residents
Keep it closed	Re-open
*prevailed	

- 05/84 — 1890 veh./day (between S. Wash./Maryland)

- 07/84 — Signal at Fleet/Monroe was built

1985 – 1990!

- 05/16/85 City Traffic Engineer is considering a traffic signal at Maryland/Argyle due to excessive delays on NB Maryland Ave. (queue = 50 v.).
- 08/28/87 First City Standard Traffic Methodology:

  Max. acceptable traffic volumes were established as 2,000 on secondary residential streets.
- 10/88 1412 veh./day,

  S. Washington counts: 550 veh./day
- 08/89 1400 veh./day
- 04/90 Traffic Signal at Maryland/Argyle was built.
- 04/90 Traffic Signal at Maryland/Fleet was built.
- 03/90 A request to re-open Argyle to T&T Commission
- 07/90 S. Van Buren residents petition supporting entry controls on Argyle
- 11/90 1800 veh./day

1997 – 2002!

- S. Washington St.:

09/29/97	471 veh./day
01/30/02	641 veh./day
10/23/02	680 veh./day

- Argyle (between Maryland Ave. & S. Washington St.):

09/12/00	1304 veh./day
09/13/00	1296 veh./day

Maryland Avenue / Argyle St.
“Semi-Diverter” / Signal Operation

2004-2005

- 09/2004 1782 veh. /day
  180 veh./hr. accessed Argyle between 7-8 AM

- 02/09/05 Petition (dated 11/19/04) submitted to staff by West End citizens to close Argyle at Monroe.

- Staff conducted turning movement and mechanical counts in the vicinity of Argyle St. and surrounding neighborhoods.

- 01/22 - 04/13 Monroe resident and Courthouse Walk do not support the closure.

- 04/13/05 Staff recommendation: Implement 7-9 AM turn restriction from Monroe onto Argyle (reduction of 123 vehicles on Argyle, and addition of 1.0 veh./minute at Monroe at Fleet). Staff also recommended implement sidewalk to improve pedestrian safety.

2004-2005 (Continued)

06/1/05 (Wed.)	2164 veh./day, 211 veh./hr. (EB+WB), 160 veh./hr (WB)
06/5/05 (Sun.)	2002 veh./day, 193 veh./hr. (EB+WB), 110 veh./hr (WB)
10/10/05	E-mail from staff informing residents with intention to post right-turn restrictions signs from Argyle onto Monroe and from Monroe onto Argyle.
10/24/05	Staff met with Courthouse Walk. Testimony from Courthouse Walk at M&C session. Signs installation deferred until further analyses to be performed by staff.

- 10/24/05 thru first week of November 2005, more data collected and analyses performed.

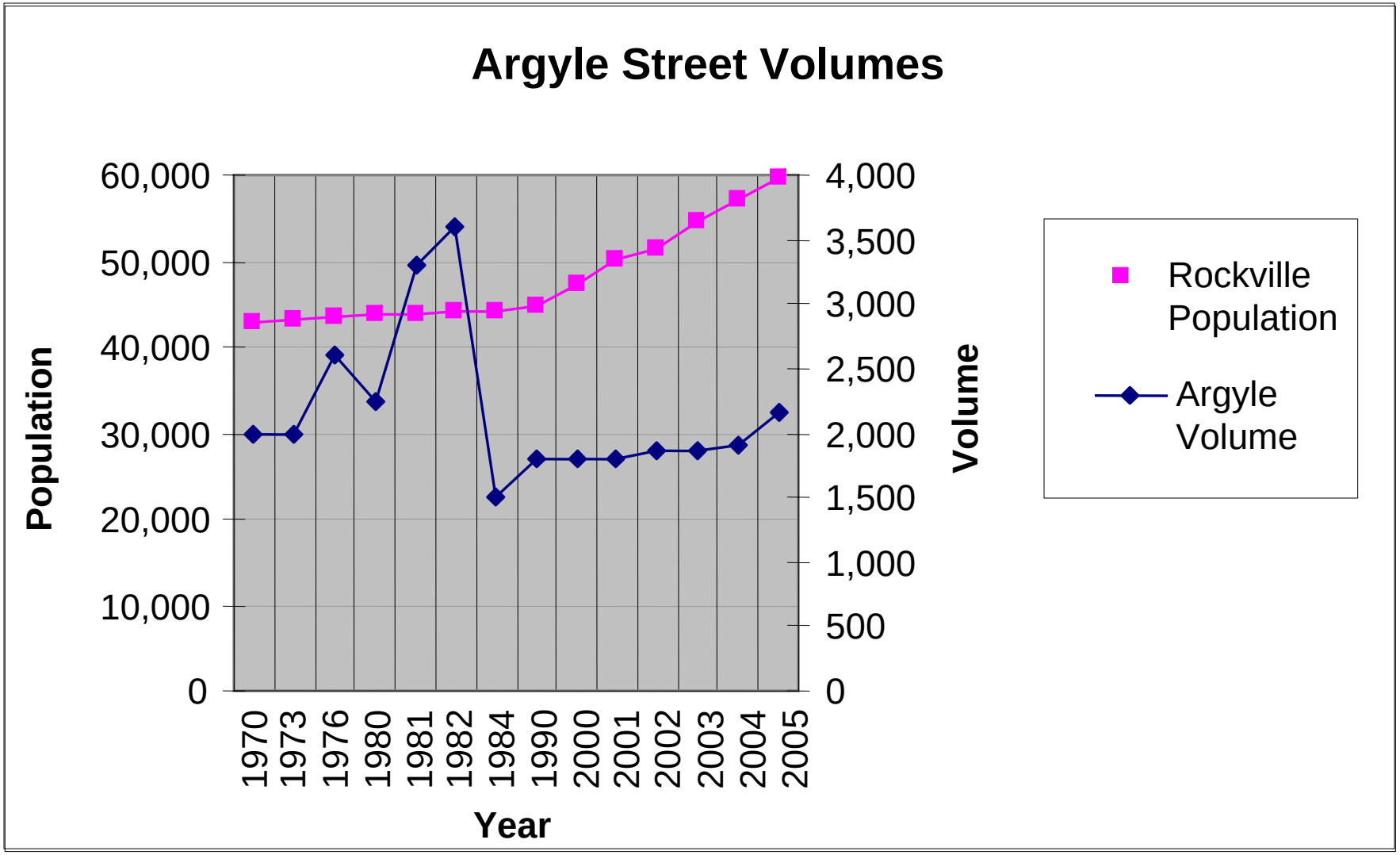
- 10/28/05 Staff met with residents at City Hall to listen to more concerns and suggestions.

- 11/10/05 Staff invited residents to attend a meeting on 11/22/05 where staff would describe results of technical analyses and to explain the rationale behind the recommendation.

- 11/22/05 First Meeting!

- 12/01/05 Today's Meeting – Second Meeting!

- Next Step: Staff will review your comments and provide City Manager a final recommendation for approval.


Argyle Street Volumes
Population
60,000
50,000
40,000
30,000
20,000
10,000
0
Volume
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1970
1973
1976
1980
1981
1982
1984
1990
2000
2001
2002
2003
2004
2005
Year
Rockville Population
Argyle Volume

4. What are the issues to be addressed during the study?

- Where does the traffic on Argyle come from?
- What traffic can be “diverted”?
- Where will this traffic be diverted to?
- What is the impact of this diversion?
- How can we minimize this impact?
- What data can we collect to help us recommending a solution?
- Any other information, studies or analysis we can do to support our recommendation?

5. What was our plan to conduct this study?

- Conduct turning movement counts at several intersections, especially at Argyle/Monroe to assess where does the Argyle traffic come from.
- Collect base traffic data for all surrounding streets and intersections to allow future comparison if needed.
- Determine the origin of the highest traffic movement(s) onto Argyle.

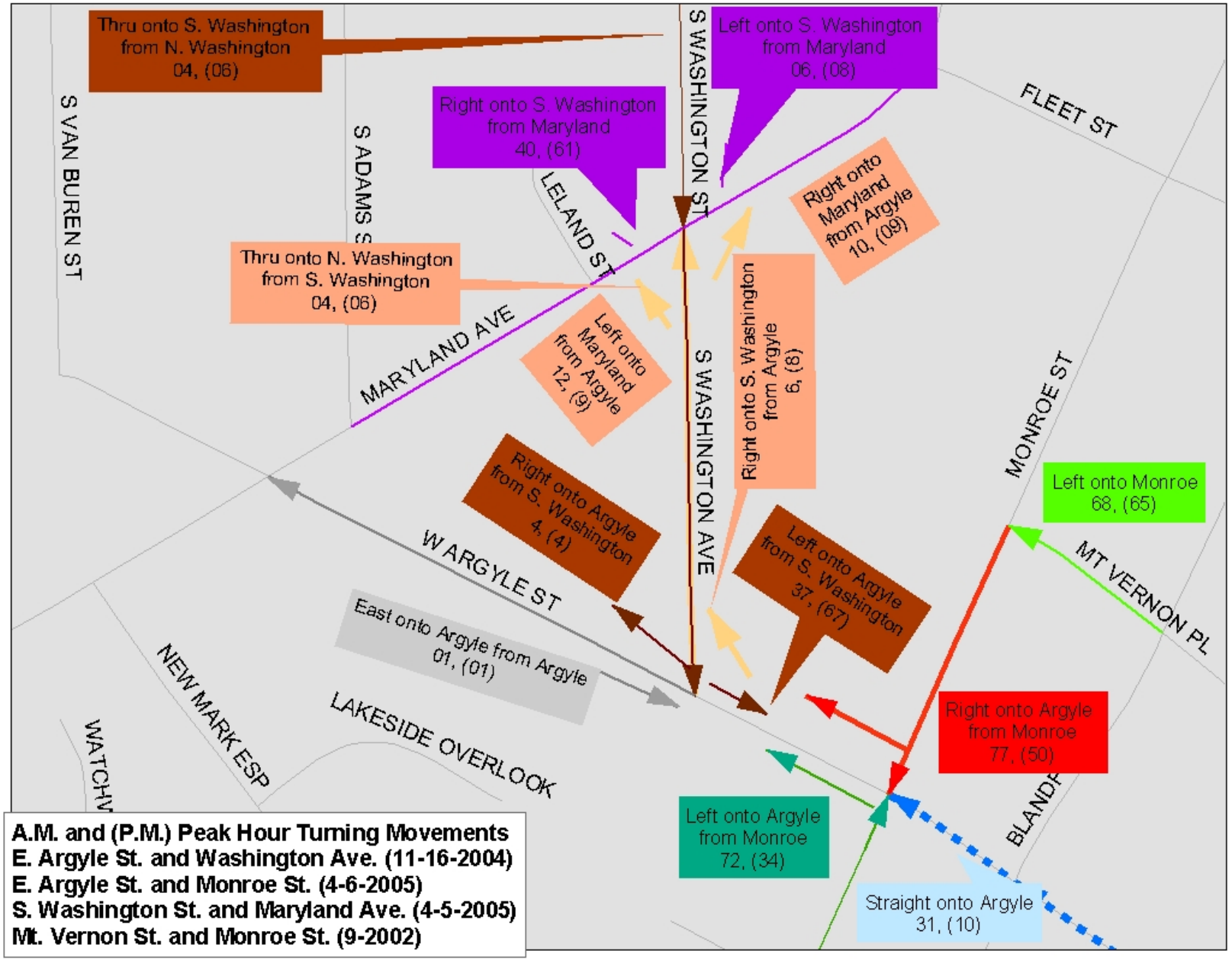
5. Plan to conduct this study? (Continued)

- Estimate the impact of this diversion on traffic volume on Argyle St. (expected traffic).
- Estimate the impact of this diversion on other streets (potential increase of traffic volume).
- Estimate the impact of this diversion on the diverted traffic (extra time, distance, etc..)
- Check options to minimize this impact (signal optimization for example)
- Consider relocating a traffic signal, performing travel time analysis, or provide any other measure to support our recommendation.

6. The Analysis

- AM/PM Turning Movement Counts
- Mechanical Counts (24 hours)
- Turn-Restriction Options
- Impact on Argyle and other streets
- Travel Time and impact on diverted traffic
- Signal Optimization
- Signal Relocation

AM/PM Turning Movement Counts



A.M. and (P.M.) Peak Hour Turning Movements
E. Argyle St. and Washington Ave. (11-16-2004)
E. Argyle St. and Monroe St. (4-6-2005)
S. Washington St. and Maryland Ave. (4-5-2005)
Mt. Vernon St. and Monroe St. (9-2002)

Mechanical Counts (24 hours) - AM

COUNT LOCATION 1: Argyle St. (SR)
btwn. Monroe & S. Washington (5/31/05 - 9/16/05)
1) AM Highest traffic Counts in One hour Period: EB= 51; WB= 160; EB+WB= 211
2) Highest Daily Total Traffic: 2164 cars on Wed., 6/1/2005; EB= 768; WB= 1396

COUNT LOCATION 2: Mount Vernon Pl (PR Class II)
btwn. Monroe & Blandford (10/31-11/3/05)
1) AM Highest traffic Counts in One hour Period: EB= 173; WB= 157; EB+WB= 330
2) Highest Daily Total Traffic: 2135 cars on Wed. 11/2/2005

COUNT LOCATION 3: W Lynfield Dr (SR)
btwn. E Argyle & Cabin John Pkwy (10/31/05 -11/3/05)
1) AM Highest traffic Counts in One hour Period: SB= 23 (One-Way Street)
2) Highest Daily Total Traffic: 196 cars on Wed. 11/2/2005

COUNT LOCATION 4: Cabin John Pkwy (PR Class II)
btwn. E Argyle & Edmonston (10/31-11/3/05)
1) AM Highest traffic Counts in One hour Period: EB= 57; WB= 56; EB+WB= 110
2) Highest Daily Total Traffic: 1235 cars on Wed. 11/2/2005

COUNT LOCATION 5: Cabin John Pkwy (PR Class II)
btwn. Monroe & Blandford (10/31-11/3/05)
1) AM Highest traffic Counts in One hour Period: EB= 45; WB= 75; (c) EB+WB= 112
2) Highest Daily Total Traffic: 1289 cars on Wed. 11/2/2005

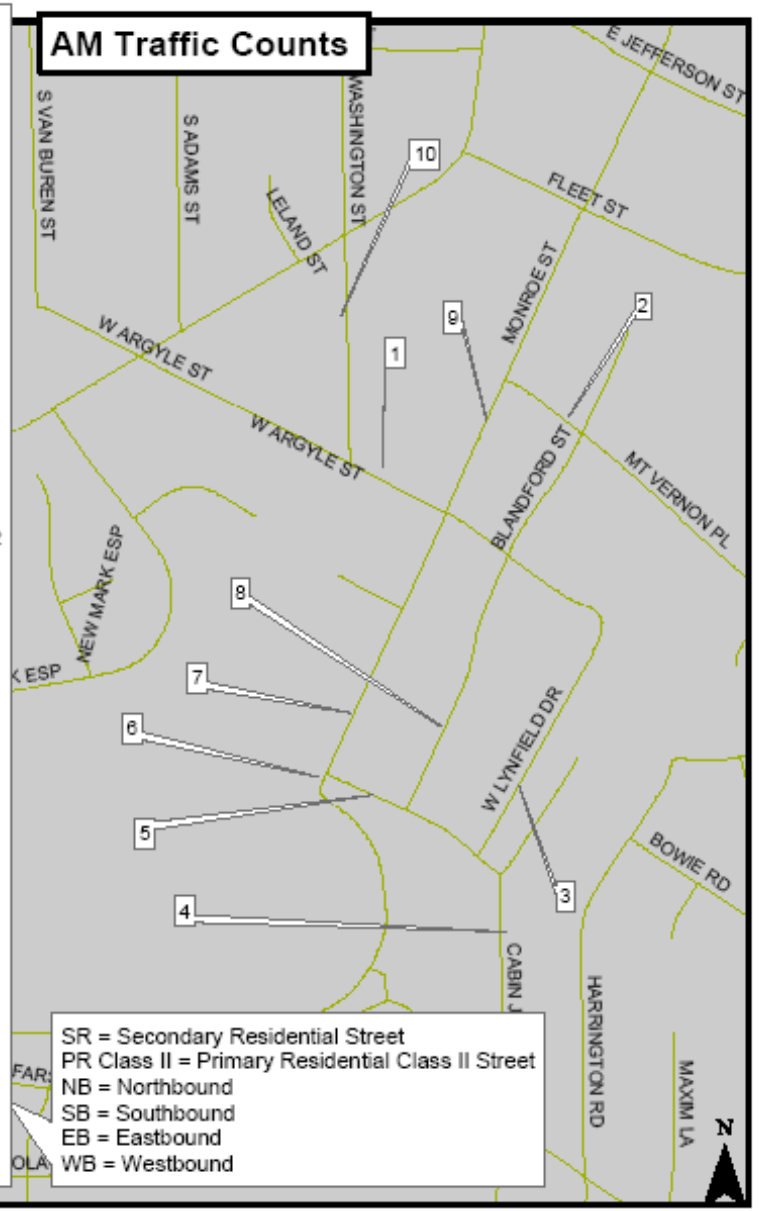
COUNT LOCATION 6: Monroe St (SR)
btwn. Cabin John Pkwy & Waddington (10/31-11/3/05)
1) AM Highest traffic Counts in One hour Period: NB= 47; SB= 22; NB+SB= 63
2) Highest Daily Total Traffic: 1464 cars on Tues. 11/1/2005

COUNT LOCATION 7
Monroe St (Primary Residential Class II)
btwn. Cabin John Pkwy & Big Oak Ct (10/31-11/3/05)
1) AM Highest traffic Counts in One hour Period: NB= 135; SB= 52; NB+SB= 176
2) Highest Daily Total Traffic: 2697 cars on Wed. 11/2/2005

COUNT LOCATION 8: Blandford St (Secondary Residential)
btwn. E Argyle & Cabin John Pkwy (10/24-10/27/05)
1) AM Highest Traffic Counts in One Hour Period: NB= 14; SB= 8; NB+SB= 21
2) Highest Daily Total Traffic: 351 cars on Tues. 10/25/2005

COUNT LOCATION 9: Lynn Manor Dr (Secondary Residential)
btwn. Lynn Manor & Monroe (10/24-10/27/05)
1) AM Highest Traffic Counts in One Hour Period: EB= 18; WB= 8; EB+WB= 26
2) Highest Daily Total traffic: 80 cars on Wed. 10/26/2005

COUNT LOCATION 10: S. Washington St. (Secondary Residential)
btwn. Monroe & S. Washington (10/24/05 - 10/27/05)
1) AM Highest traffic Counts in One hour Period: SB= 43; NB= 12; NB+WB= 49
2) Highest Daily Total Traffic: 737cars on Wed. 10/26/2005; SB= 646; NB= 91



Mechanical Counts (24 hours) - PM

COUNT LOCATION 1: Argyle St. (SR)
btwn. Monroe & S. Washington (5/31/05 - 9/16/05)
1) PM Highest traffic Counts in One hour Period: EB= 83; WB= 117; EB+WB= 175
2) Highest Daily Total Traffic: 2164 cars on Wed., 6/1/2005; EB= 768; WB= 1396

COUNT LOCATION 2: Mount Vernon Pl (PR Class II)
btwn. Monroe & Blandford (10/31-11/3/05)
1) PM Highest traffic Counts in One hour Period: EB= 71; WB= 141; EB+WB= 210
2) Highest Daily Total Traffic: 2135 cars on Wed. 11/2/2005

COUNT LOCATION 3: W Lynfield Dr (SR)
btwn. E Argyle & Cabin John Pkwy (10/31/05 -11/3/05)
1) PM Highest traffic Counts in One hour Period: SB= 23 (One-Way Street)
2) Highest Daily Total Traffic: 196 cars on Wed. 11/2/2005

COUNT LOCATION 4: Cabin John Pkwy (PR Class II)
btwn. E Argyle & Edmonston (10/31-11/3/05)
1) PM Highest traffic Counts in One hour Period: EB= 58; WB= 95; EB+WB= 151
2) Highest Daily Total Traffic: 1235 cars on Wed. 11/2/2005

COUNT LOCATION 5: Cabin John Pkwy (PR Class II)
btwn. Monroe & Blandford (10/31-11/3/05)
1) PM Highest traffic Counts in One hour Period: EB= 54; WB= 98; (c) EB+WB= 148
2) Highest Daily Total Traffic: 1289 cars on Wed. 11/2/2005

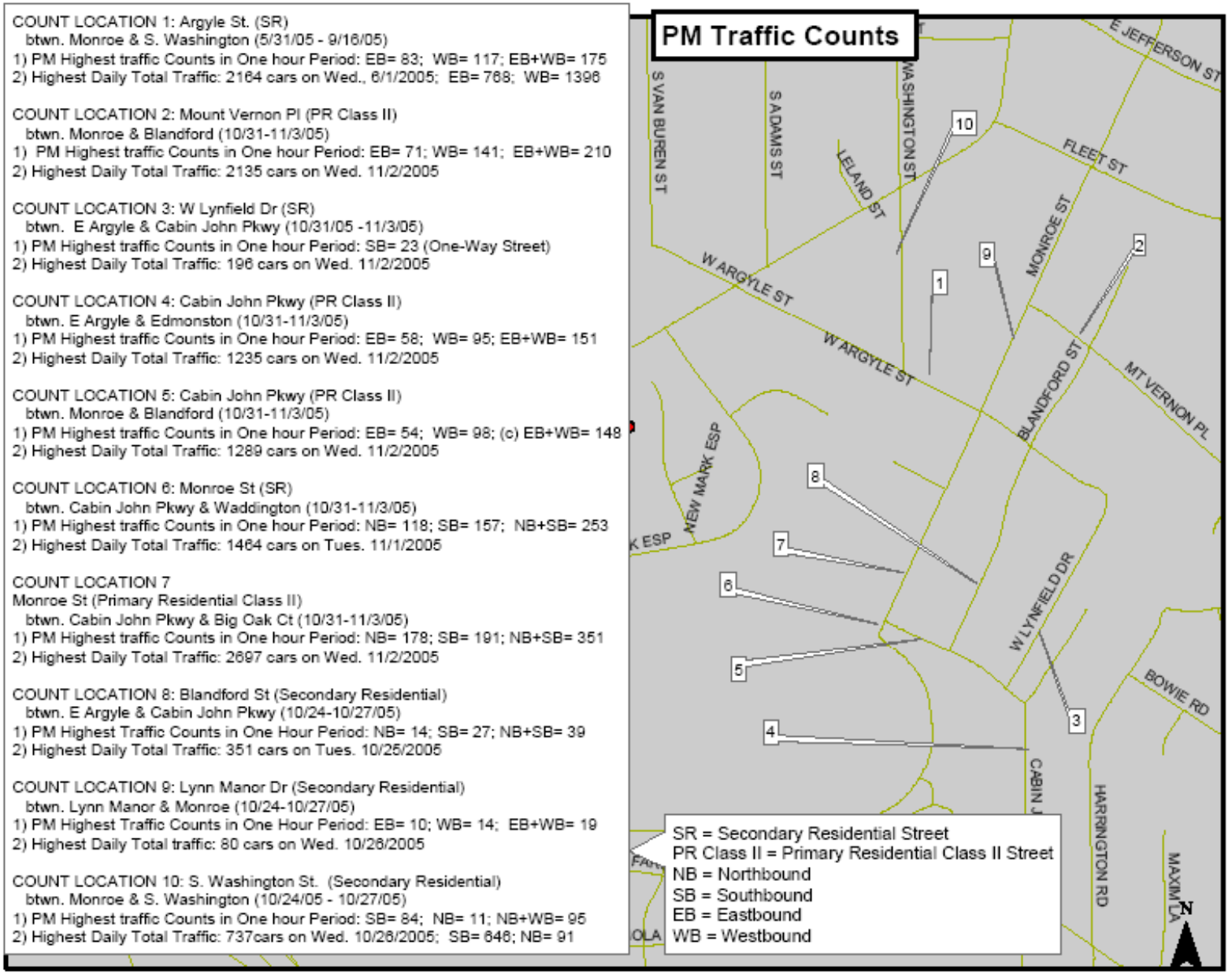
COUNT LOCATION 6: Monroe St (SR)
btwn. Cabin John Pkwy & Waddington (10/31-11/3/05)
1) PM Highest traffic Counts in One hour Period: NB= 118; SB= 157; NB+SB= 253
2) Highest Daily Total Traffic: 1464 cars on Tues. 11/1/2005

COUNT LOCATION 7
Monroe St (Primary Residential Class II)
btwn. Cabin John Pkwy & Big Oak Ct (10/31-11/3/05)
1) PM Highest traffic Counts in One hour Period: NB= 178; SB= 191; NB+SB= 351
2) Highest Daily Total Traffic: 2697 cars on Wed. 11/2/2005

COUNT LOCATION 8: Blandford St (Secondary Residential)
btwn. E Argyle & Cabin John Pkwy (10/24-10/27/05)
1) PM Highest Traffic Counts in One Hour Period: NB= 14; SB= 27; NB+SB= 39
2) Highest Daily Total Traffic: 351 cars on Tues. 10/25/2005

COUNT LOCATION 9: Lynn Manor Dr (Secondary Residential)
btwn. Lynn Manor & Monroe (10/24-10/27/05)
1) PM Highest Traffic Counts in One Hour Period: EB= 10; WB= 14; EB+WB= 19
2) Highest Daily Total traffic: 80 cars on Wed. 10/26/2005

COUNT LOCATION 10: S. Washington St. (Secondary Residential)
btwn. Monroe & S. Washington (10/24/05 - 10/27/05)
1) PM Highest traffic Counts in One hour Period: SB= 84; NB= 11; NB+WB= 95
2) Highest Daily Total Traffic: 737cars on Wed. 10/26/2005; SB= 646; NB= 91



Turn Restriction Options

(1). No Right-Turn From Monroe

Period	Reduction (# Trips)
7-9 AM	123
4-6 PM	89
Both peaks	**212***
24 hours	**692***

(2). No Right-Turn from Argyle

Period	Reduction (# Trips)
7-9 AM	26
4-6 PM	67
Both peaks	93
24 hours	**299***

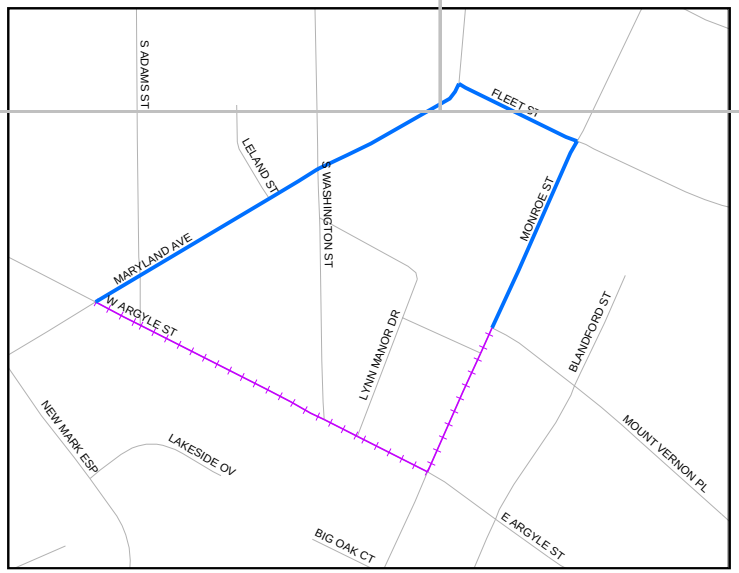
(1 + 2). Both Restrictions

Period	Reduction (# Trips)
7-9 AM	149
4-6 PM	156
Both peaks	**305***
24 hours	**991***

* - Options bringing the total traffic volume on Argyle from 2164 to a value under the threshold of 2000 vehicles/day.

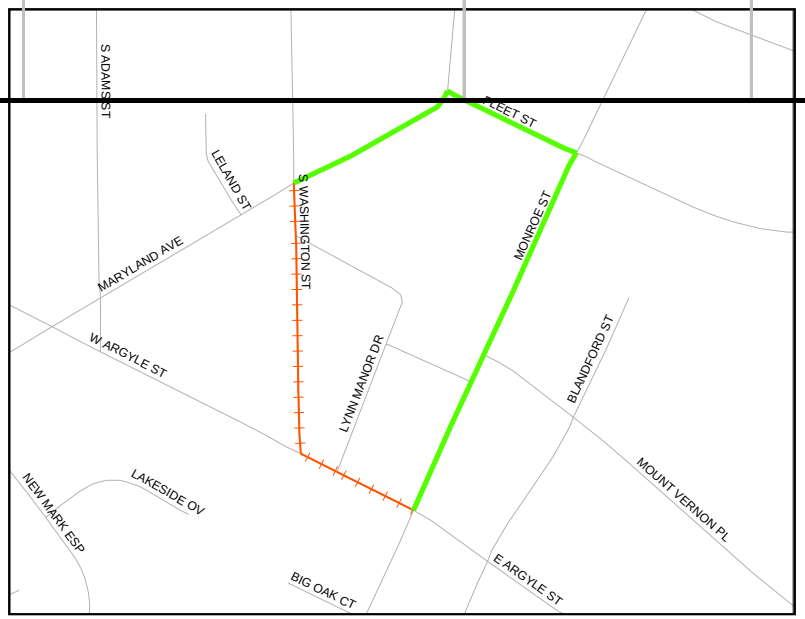
Impacts to Hungerford/Stoneridge, New Mark Commons, Lynfield (AM)

11/2/2005	DASHED PURPLE: 1) Start at Monroe Street at Mt. Vernon Place; 2) Right onto Argyle Street; 3) Argyle Street to end at Maryland Avenue		SOLID BLUE: 1) Start at Monroe Street at Mt. Vernon Place; 2) Left onto Fleet Street; 3) Left onto Maryland Avenue to end at Argyle Street and Maryland Avenue		
	Start Time	**Route Run Time**	**Start Time**	**Route Run Time**	**Difference**
A.M.	7:27 A.M.	1:59:90	7:30 A.M.	2:28:21	28 seconds
	8:02 A.M.	1:10:65	8:06 A.M.	1:52:49	62 seconds
	8:18 A.M.	1:22:64	8:20 A.M.	2:37:2	75 seconds
					48 seconds average difference



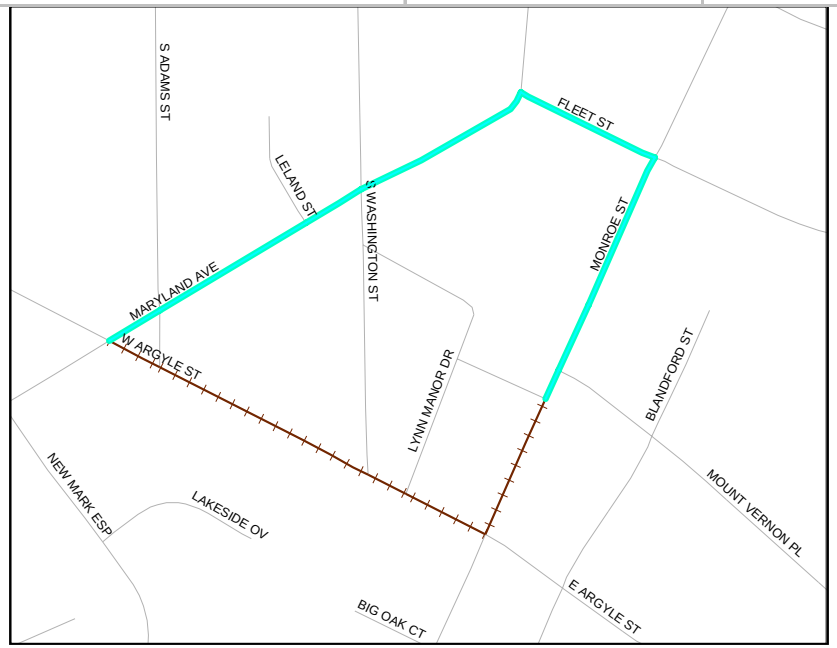
Impacts to Hungerford/Stoneridge, New Mark Commons, Lynfield (PM)

11/2/2005	DASHED ORANGE: 1) Start at Maryland Avenue and S. Washington Street; 2) Right onto S. Washington Street; 3) Right onto Argyle Street to end at Argyle Street and Monroe Street		SOLID GREEN: 1) Start at Maryland Avenue and S. Washington Street; 2) Right onto Fleet Street; 3) Right onto Monroe Street to end at Argyle Street and Monroe Street		
	Start Time	**Route Run Time**	**Start Time**	**Route Run Time**	**Difference**
P.M.		54 seconds		56 seconds	2 seconds
		52 seconds		60 seconds	8 seconds
		40 seconds		53 seconds	13 seconds
		43 seconds		56 seconds	13 seconds
					9 seconds average difference



Impacts to Courthouse Walk

11/9/2005	DASHED BROWN: 1) Start at Monroe Street and Lynn Manor Drive; 2) Right onto Argyle Street to end at Argyle Street and Maryland Avenue		SOLID TURQUOISE: 1) Start at Monroe Street and Lynn Manor Drive; 2) Left onto Fleet Street; 3) Left onto Maryland Avenue to end at Argyle Street and Maryland Avenue		
A.M.	**Start Time**	**Route Run Time**	**Start Time**	**Route Run Time**	**Difference**
	7:09 A.M.	1:16:77	7:14 A.M.	2:35:49	78 seconds
	7:51 A.M.	1:24:50	7:55 A.M.	2:20:32	95 seconds
	8:25 A.M.	1:57:72	8:28 A.M.	2:17:52	20 seconds
					64 seconds average difference



Signal Optimization

- Current signal timing at the intersection of Fleet/Monroe has a cycle length of 90 seconds. (A full cycle of red, yellow and green for all directions is 90-second long).
- The signal provides traffic on Fleet Street with more green time than traffic on Monroe St. (for example a ratio of 58/42 during the AM peak period). This should allow traffic on Fleet St. to clear the intersection within each cycle.
- Staff does not recommend changing the current signal timing if turn restrictions are implemented. Staff will monitor queuing and time impacts with turn restrictions in effect, and modify the signal timing at this intersection and at the intersection of Fleet/Maryland, if needed.

Signal Relocation

- Investigate the relocation of the traffic signal at E. Argyle St. and Maryland Ave to the intersection of S. Washington St. and Maryland Ave.
- The reason the signal was installed (April 1990) was to move traffic on Maryland Avenue which used to queue up to New Mark Esplanade.
- The cost for a new signal is approx. $80,000
- If signal equipment are re-used, the saving will be about $30,000 (mast arms, signal heads, signal cabinet, etc..)
- Labor cost to relocate signal equipment (mast arms, cabinet, etc..) is approx. $10,000
- Cost estimate to relocate the traffic signal is approximately $60,000.

6. Recommendation

- Restrict the right-turn movement from southbound Monroe St. to westbound E. Argyle St. to reduce the traffic volume on the secondary residential street to a level below the thresholds established by the City.
- This measure, while achieving our goal, should have a minimum impact on surrounding neighborhoods and routes.

Questions?